

STORAGE SYSTEM AND METHOD FOR SUPPLYING HYDROGEN TO A
POLYMER MEMBRANE FUEL CELL

ABSTRACT

A hydrogen storage system and method having a main hydrogen storage site that contains a sufficient amount of hydrogen for a fuel cell employing a polymer membrane to generate power in accordance with a predetermined electrical power requirement. A main storage site is provided to store and supply hydrogen to meet the electrical power requirement for the fuel cell. An auxiliary hydrogen storage site contains a sufficient amount of hydrogen to allow the fuel cell to operate on a scheduled basis that is required to maintain the polymer membrane hydrated. A manifold connects the main and auxiliary hydrogen storage sites and has an outlet to deliver hydrogen to the fuel cell. The manifold allows the auxiliary hydrogen storage site to be renewed independently of the main storage site and has a flow control network to allow the fuel cell to draw hydrogen from the auxiliary hydrogen storage site for maintenance purposes without utilization of the hydrogen from the main hydrogen storage site.